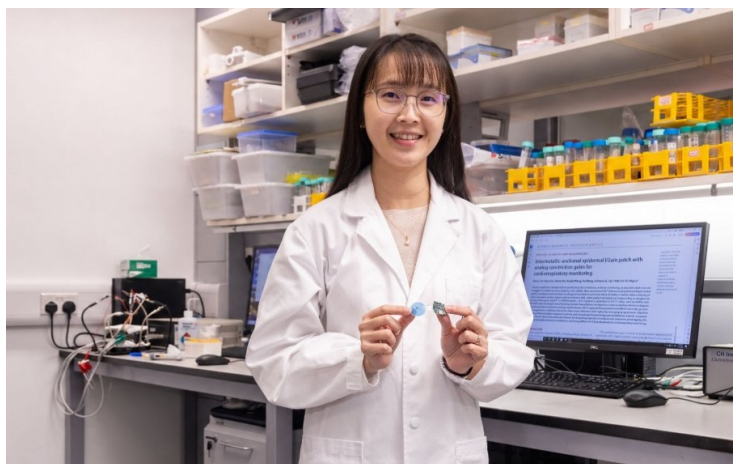


Hong Kong develops liquid-metal smart patch for at-home cardiorespiratory monitoring

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This soft, skin-like patch simultaneously tracks both breathing and heart activity



A research team led by Prof. Hnin Yin Yin NYEIN from the Department of Chemical and Biological Engineering at The Hong Kong University of Science and Technology (HKUST) has developed a novel wearable device named "HELP" (heteromodal epidermal liquid-metal patch).

By leveraging liquid-metal technology, this soft, skin-like patch simultaneously tracks both breathing and heart activity. This comfortable, non-invasive technology marks a promising step toward a future where patients with chronic respiratory and heart conditions can receive continuous, clinical-grade health monitoring right at home.

Chronic respiratory diseases, including asthma, chronic obstructive pulmonary disease (COPD), and obstructive sleep apnea (OSA), are among the leading causes of health decline and hospitalisation worldwide. Currently, managing and diagnosing these conditions relies heavily on procedures confined to specialised clinical environments.

While wearable health sensors present an ideal solution for continuous home monitoring, engineers worldwide have long struggled with a fundamental performance trade-off: designing a sensor that is highly sensitive to subtle body movements while remaining stable over extended periods of wear.

Liquid metals (LMs) has been recognised as premier materials for soft electronics due to its excellent flexibility and near-zero mechanical fatigue.

The team developed a highly scalable, simple stencil-brushing process to pattern the liquid metal onto the anchored substrate, making the device cost-effective and highly amenable to mass production.